

## PATENT ABSTRACTS OF JAPAN

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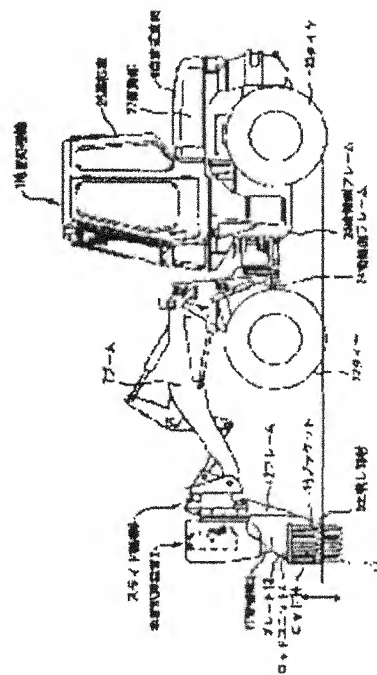
(72)Inventor : SHIBATA HIROTOSHI

### (54) MINE CLEANING DEVICE

#### (57)Abstract:

**PROBLEM TO BE SOLVED:** To prevent a soil removing member from being broken by the direct hit of a blast and prevent other main parts such as a rod unit or an impact mechanism, a slide mechanism, a boom and a self-propelled vehicle from being damaged.

**SOLUTION:** A mine cleaning device 2 comprises the rod unit 4 having a plurality of rods 14 arranged in parallel on a plate 13 and the impact mechanism 3 for applying a downward impact to the rod unit 4 and is supported by the boom 7 of a mine cleaning machine 1 through the slide mechanism 8. The soil removing member 5 for removing sediment or stones filled in between the rods 14 is mounted on the frame 12 of the slide mechanism 8 through a cushioning material.



### LEGAL STATUS

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CLAIMS

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[Claim(s)]

[Claim 1] Mine-disposal equipment which is mine-disposal equipment which two or more rods equip the plate with the blow device in which a blow to a lower part is dealt to the rod unit by which juxtaposition arrangement was carried out, and a rod unit, and is supported by the boom of a mine-disposal machine through a sliding mechanism, and is characterized by equipping the frame of a sliding mechanism with the soil dropping member which removes the earth and sand got blocked between rods, a stone, etc. through shock absorbing material.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the mine-disposal equipment for processing the mine laid underground in the earth.

[0002]

[Description of the Prior Art] In order to process the mine laid underground in the earth, the mine-disposal machine which formed mine-disposal equipment ahead of the self-propelled car is proposed. The rod unit 4 by which juxtaposition arrangement of two or more rods 14 was carried out in this mine-disposal machine 1 at the plate 13 as shown in drawing 4 , Mine-disposal equipment 2 equipped with the blow device 3 in which a blow to a lower part is dealt to the rod unit 4 It is supported through the sliding mechanism 8 by the front end of the boom 7 prepared in the self-propelled car 6, and a controller controls actuation of a sliding mechanism 8 and the blow device 3 based on the detection data of the position transducer which detects the location of mine-disposal equipment 2.

[0003] In doing a mine-disposal activity, the mine-disposal machine 1 deals a blow to a lower part to the rod unit 4 by the blow device 3, moves the rod unit 4 below with a sliding mechanism 8, makes penetrating of the rod 14 carry out in the earth, and destroys or explodes the mine currently laid underground in the earth. During an activity, a position transducer detects the location of mine-disposal equipment 2, and a controller controls actuation of a sliding mechanism 8 and the blow device 3 based on the detection data of a position transducer. By covering predetermined processing width of face in mine-disposal equipment 2 ahead [ of the self-propelled car 6 ], making it move to right and left, and performing a draw with penetrating to underground of the rod unit 4, the mine currently laid under the field more than breadth of a car is processed, and advance of the self-propelled car 6 is enabled. Therefore, the mine-disposal machine 1 can process the mine of the whole region in mine Hara by repeating processing and advance of a mine.

[0004] It has the soil dropping member 9 for removing earth and sand, a stone, etc. which were got blocked between rods 14 so that this mine-disposal equipment 2 may get earth and sand, a stone, etc. blocked among two or more rods 14 and trouble may not be caused to continuous operation. As shown in drawing 5 , the soil dropping member 9 is the same spacing as spacing of a rod 14, is the steel plate which carried out opening of the rod passage hole 11 of a major diameter a little than a rod 14, and is fixed to the lower limit section of the frame 12 of a sliding mechanism 8. Earth and sand, a stone, etc. which were got blocked between rods 14 when it intruded in the earth are removed by the soil dropping member 9 when extracting the rod unit 4, and a rod 14 passes the rod passage hole 11.

[0005]

[Problem(s) to be Solved by the Invention] However, since the soil dropping member 9 is being directly fixed to the lower limit section of the frame 12 of a sliding mechanism 8, this mine-disposal equipment 2 When the mine which penetrating of the rod 14 was made to carry out in the earth, and was laid underground is exploded, the soil dropping member 9 tends to be hit directly and destroyed by the blast, and there is a possibility of damaging even a part for the rod unit 4 or the principal part of blow device 3

grade others, a sliding mechanism 8 and a boom 7, and the self-propelled car 6 under the effect.

[0006] A soil dropping member is not destroyed by the direct stroke of a blast, but this invention aims at offering the mine-disposal equipment which can prevent that damage arises on other part for the principal part and sliding mechanisms, such as a rod unit and a blow device, a boom, and a self-propelled car, when the above-mentioned problem in mine-disposal equipment is solved and a mine is exploded.

[0007]

[Means for Solving the Problem] In this invention, two or more rods equip the plate with the blow device in which a blow to a lower part is dealt to the rod unit by which juxtaposition arrangement was carried out, and a rod unit, and the above-mentioned technical problem is solved in the mine-disposal equipment supported by the boom of a mine-disposal machine through a sliding mechanism by equipping the frame of a sliding mechanism with the soil dropping member which removes the earth and sand got blocked between rods, a stone, etc. through shock absorbing material.

[0008] In doing a mine-disposal activity, a mine-disposal machine deals a blow to a lower part to a rod unit by the blow device, it moves a rod unit below with a sliding mechanism, makes penetrating of the rod carry out in the earth, and destroys or explodes a mine. The stone got blocked between rods when it intruded in the earth is removed by the soil dropping member when extracting a rod unit.

[0009] With this mine-disposal equipment, since the frame of a sliding mechanism is equipped with the soil dropping member through shock absorbing material, when the mine which penetrating of the rod was made to carry out in the earth, and was laid underground is exploded, even if a soil dropping member is directly hit by the blast, the impact by the blast is eased with shock absorbing material.

Therefore, when a mine is exploded, a soil dropping member is not destroyed by the direct stroke of a blast, but it can prevent that damage arises on other part for the principal part and sliding mechanisms, such as a rod unit and a blow device, a boom, and a self-propelled car.

[0010]

[Embodiment of the Invention] The explanatory view of the wearing condition of a soil dropping member and drawing 3 of the side elevation of the mine-disposal machine with which drawing 1 was equipped with the mine-disposal equipment in which one gestalt of operation of this invention is shown, and drawing 2 are the bottom views of a soil dropping member. Here, the body of the mine-disposal machine 1 is the self-propelled car 6 of the articulated type which connected with right and left the front-wheel side frame 14 which formed the tire 22, and the rear wheel side frame 25 which formed the tire 23 turnable in the center section, and the boom 7 which can rise and fall is formed in the front-wheel side frame 24. The driver's cabin 26 and the motor unit 27 are formed in the rear wheel side frame 25.

[0011] In addition, cars of other formats, such as a crawler type, can also be used for a self-propelled car. Mine-disposal equipment 2 is equipped with the blow device 3 which consists of a hydraulic breaker, and the rod unit 4 by which juxtaposition arrangement of two or more rods 14 was carried out at the plate 13, and is supported by the front end of a boom 7 movable in the longitudinal direction and the vertical direction through the sliding mechanism 8.

[0012] A rod 14 is set as the die length which arrives enough till the place (usually an anti-personnel mine about 20cm below ground) under which the mine used as a processing object is laid. Moreover, when it intrudes in the earth, the distance between each rod 14 is set as the distance corresponding to the magnitude of the mine used as a processing object so that a mine may enter between rods 14 and destruction and blasting processing may become impossible.

[0013] Based on the detection data of the position transducer with which this mine-disposal machine 1 detects the location of mine-disposal equipment 2, a controller controls actuation of a sliding mechanism 8 and the blow device 3. In doing a mine-disposal activity, the mine-disposal machine 1 deals a blow to a lower part to the rod unit 4 by the blow device 3, moves the rod unit 4 below with a sliding mechanism 8, makes penetrating of the rod 14 carry out in the earth, and destroys or explodes the mine currently laid underground in the earth. the impact by the blast since the actuator for the vertical directions of a sliding mechanism 8 had changed to the float position at this time, when mine-disposal equipment 2 explodes a mine -- the upper part -- winning popularity -- \*\*\*\*\* -- things are made.

[0014] During an activity, a position transducer detects the location of mine-disposal equipment 2, and a controller controls actuation of a sliding mechanism 8 and the blow device 3 based on the detection data of a position transducer. By covering predetermined processing width of face in mine-disposal equipment 2 ahead [ of the self-propelled car 6 ], making it move to right and left, and performing a draw with penetrating to underground of the rod unit 4, the mine currently laid under the field more than breadth of a car is processed, and advance of the self-propelled car 6 is enabled. Therefore, the mine-disposal machine 1 can process the mine of the whole region in mine Hara by repeating processing and advance of a mine.

[0015] It has the soil dropping member 5 for removing earth and sand, a stone, etc. which were got blocked between rods 14 so that this mine-disposal equipment 2 may get earth and sand, a stone, etc. blocked among two or more rods 14 and trouble may not be caused to continuous operation. As shown in drawing 2 and drawing 3, the soil dropping member 5 is the same spacing as spacing of a rod 14, it is the steel plate which carried out opening of the rod passage hole 11 of a major diameter a little than a rod 14, and a mounting bolt 15 is set up by right and left, and the bracket 16 fixed to the lower part of the frame 12 of a sliding mechanism 8 is equipped with this mounting bolt 15 with the nut 17.

[0016] Between the soil dropping member 5 and the bracket 16, the spring 18 is infixed as shock absorbing material, and with a nut 17, buffer absorptive power can be adjusted and it can be set as the impact reference value of arbitration. In addition, it may replace with a spring 18 and the elastic material of rubber and others may be used for shock absorbing material.

[0017] Earth and sand, a stone, etc. which were got blocked between rods 14 when it intruded in the earth are removed by the soil dropping member 5 when extracting the rod unit 4, and a rod 14 passes the rod passage hole 11. With this mine-disposal equipment 2, since the bracket 16 fixed to the frame 12 of a sliding mechanism 8 is equipped with the soil dropping member 5 through the spring 18, when the mine which penetrating of the rod 14 was made to carry out in the earth, and was laid underground is exploded, even if the soil dropping member 5 is directly hit by the blast, the impact by the blast is eased with a spring 18.

[0018] Therefore, when a mine is exploded, it can also be prevented that the soil dropping member 5 is not destroyed by the direct stroke of a blast, and the effect of destruction of the soil dropping member 5 reaches, and damage arises on a part for the rod unit 14 or the principal part of blow device 3 grade others, a sliding mechanism 8 and a boom 7, and the self-propelled car 6. In addition, although breakage is not escaped, if it attaches in the plate 13 with means, such as immobilization by the snap ring from the upper part, a nut stop, and a bell and spigot, even if it damages, it is quickly [ easily and ] exchangeable [ a rod 14 ] for a new article.

[0019]

[Effect of the Invention] As explained above, when the mine which the mine-disposal equipment of this invention made penetrating of the rod carry out in the earth, and was laid underground is exploded, even if a soil dropping member is directly hit by the blast, the impact by the blast is eased with shock absorbing material. Therefore, when a mine is exploded, a soil dropping member is not destroyed by the direct stroke of a blast. Moreover, it can prevent that the effect of destruction of the soil dropping member 5 reaches, and damage arises on other part for the principal part and sliding mechanisms, such as a rod unit and a blow device, a boom, and a self-propelled car.

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TECHNICAL FIELD

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[Field of the Invention] This invention relates to the mine-disposal equipment for processing the mine laid underground in the earth.

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PRIOR ART

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[Description of the Prior Art] In order to process the mine laid underground in the earth, the mine-disposal machine which formed mine-disposal equipment ahead of the self-propelled car is proposed. The rod unit 4 by which juxtaposition arrangement of two or more rods 14 was carried out in this mine-disposal machine 1 at the plate 13 as shown in drawing 4 , Mine-disposal equipment 2 equipped with the blow device 3 in which a blow to a lower part is dealt to the rod unit 4 It is supported through the sliding mechanism 8 by the front end of the boom 7 prepared in the self-propelled car 6, and a controller controls actuation of a sliding mechanism 8 and the blow device 3 based on the detection data of the position transducer which detects the location of mine-disposal equipment 2.

[0003] In doing a mine-disposal activity, the mine-disposal machine 1 deals a blow to a lower part to the rod unit 4 by the blow device 3, moves the rod unit 4 below with a sliding mechanism 8, makes penetrating of the rod 14 carry out in the earth, and destroys or explodes the mine currently laid underground in the earth. During an activity, a position transducer detects the location of mine-disposal equipment 2, and a controller controls actuation of a sliding mechanism 8 and the blow device 3 based on the detection data of a position transducer. By covering predetermined processing width of face in mine-disposal equipment 2 ahead [ of the self-propelled car 6 ], making it move to right and left, and performing a draw with penetrating to underground of the rod unit 4, the mine currently laid under the field more than breadth of a car is processed, and advance of the self-propelled car 6 is enabled. Therefore, the mine-disposal machine 1 can process the mine of the whole region in mine Hara by repeating processing and advance of a mine.

[0004] It has the soil dropping member 9 for removing earth and sand, a stone, etc. which were got blocked between rods 14 so that this mine-disposal equipment 2 may get earth and sand, a stone, etc. blocked among two or more rods 14 and trouble may not be caused to continuous operation. As shown in drawing 5 , the soil dropping member 9 is the same spacing as spacing of a rod 14, is the steel plate which carried out opening of the rod passage hole 11 of a major diameter a little than a rod 14, and is fixed to the lower limit section of the frame 12 of a sliding mechanism 8. Earth and sand, a stone, etc. which were got blocked between rods 14 when it intruded in the earth are removed by the soil dropping member 9 when extracting the rod unit 4, and a rod 14 passes the rod passage hole 11.

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EFFECT OF THE INVENTION

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[Effect of the Invention] As explained above, when the mine which the mine-disposal equipment of this invention made penetrating of the rod carry out in the earth, and was laid underground is exploded, even if a soil dropping member is directly hit by the blast, the impact by the blast is eased with shock absorbing material. Therefore, when a mine is exploded, a soil dropping member is not destroyed by the direct stroke of a blast. Moreover, it can prevent that the effect of destruction of the soil dropping member 5 reaches, and damage arises on other part for the principal part and sliding mechanisms, such as a rod unit and a blow device, a boom, and a self-propelled car.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, since the soil dropping member 9 is being directly fixed to the lower limit section of the frame 12 of a sliding mechanism 8, this mine-disposal equipment 2 When the mine which penetrating of the rod 14 was made to carry out in the earth, and was laid underground is exploded, the soil dropping member 9 tends to be hit directly and destroyed by the blast, and there is a possibility of damaging even a part for the rod unit 4 or the principal part of blow device 3 grade others, a sliding mechanism 8 and a boom 7, and the self-propelled car 6 under the effect. [0006] A soil dropping member is not destroyed by the direct stroke of a blast, but this invention aims at offering the mine-disposal equipment which can prevent that damage arises on other part for the principal part and sliding mechanisms, such as a rod unit and a blow device, a boom, and a self-propelled car, when the above-mentioned problem in mine-disposal equipment is solved and a mine is exploded.

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MEANS

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[Means for Solving the Problem] In this invention, two or more rods equip the plate with the blow device in which a blow to a lower part is dealt to the rod unit by which juxtaposition arrangement was carried out, and a rod unit, and the above-mentioned technical problem is solved in the mine-disposal equipment supported by the boom of a mine-disposal machine through a sliding mechanism by equipping the frame of a sliding mechanism with the soil dropping member which removes the earth and sand got blocked between rods, a stone, etc. through shock absorbing material.

[0008] In doing a mine-disposal activity, a mine-disposal machine deals a blow to a lower part to a rod unit by the blow device, it moves a rod unit below with a sliding mechanism, makes penetrating of the rod carry out in the earth, and destroys or explodes a mine. The stone got blocked between rods when it intruded in the earth is removed by the soil dropping member when extracting a rod unit.

[0009] With this mine-disposal equipment, since the frame of a sliding mechanism is equipped with the soil dropping member through shock absorbing material, when the mine which penetrating of the rod was made to carry out in the earth, and was laid underground is exploded, even if a soil dropping member is directly hit by the blast, the impact by the blast is eased with shock absorbing material. Therefore, when a mine is exploded, a soil dropping member is not destroyed by the direct stroke of a blast, but it can prevent that damage arises on other part for the principal part and sliding mechanisms, such as a rod unit and a blow device, a boom, and a self-propelled car.

[0010]

[Embodiment of the Invention] The explanatory view of the wearing condition of a soil dropping member and drawing 3 of the side elevation of the mine-disposal machine with which drawing 1 was equipped with the mine-disposal equipment in which one gestalt of operation of this invention is shown, and drawing 2 are the bottom views of a soil dropping member. Here, the body of the mine-disposal machine 1 is the self-propelled car 6 of the articulated type which connected with right and left the front-wheel side frame 14 which formed the tire 22, and the rear wheel side frame 25 which formed the tire 23 turnable in the center section, and the boom 7 which can rise and fall is formed in the front-wheel side frame 24. The driver's cabin 26 and the motor unit 27 are formed in the rear wheel side frame 25.

[0011] In addition, cars of other formats, such as a crawler type, can also be used for a self-propelled car. Mine-disposal equipment 2 is equipped with the blow device 3 which consists of a hydraulic breaker, and the rod unit 4 by which juxtaposition arrangement of two or more rods 14 was carried out at the plate 13, and is supported by the front end of a boom 7 movable in the longitudinal direction and the vertical direction through the sliding mechanism 8.

[0012] A rod 14 is set as the die length which arrives enough till the place (usually an anti-personnel mine about 20cm below ground) under which the mine used as a processing object is laid. Moreover, when it intrudes in the earth, the distance between each rod 14 is set as the distance corresponding to the magnitude of the mine used as a processing object so that a mine may enter between rods 14 and destruction and blasting processing may become impossible.

[0013] Based on the detection data of the position transducer with which this mine-disposal machine 1 detects the location of mine-disposal equipment 2, a controller controls actuation of a sliding mechanism

8 and the blow device 3. In doing a mine-disposal activity, the mine-disposal machine 1 deals a blow to a lower part to the rod unit 4 by the blow device 3, moves the rod unit 4 below with a sliding mechanism 8, makes penetrating of the rod 14 carry out in the earth, and destroys or explodes the mine currently laid underground in the earth. the impact by the blast since the actuator for the vertical directions of a sliding mechanism 8 had changed to the float position at this time, when mine-disposal equipment 2 explodes a mine -- the upper part -- winning popularity -- \*\*\*\*\* -- things are made.

[0014] During an activity, a position transducer detects the location of mine-disposal equipment 2, and a controller controls actuation of a sliding mechanism 8 and the blow device 3 based on the detection data of a position transducer. By covering predetermined processing width of face in mine-disposal equipment 2 ahead [ of the self-propelled car 6 ], making it move to right and left, and performing a draw with penetrating to underground of the rod unit 4, the mine currently laid under the field more than breadth of a car is processed, and advance of the self-propelled car 6 is enabled. Therefore, the mine-disposal machine 1 can process the mine of the whole region in mine Hara by repeating processing and advance of a mine.

[0015] It has the soil dropping member 5 for removing earth and sand, a stone, etc. which were got blocked between rods 14 so that this mine-disposal equipment 2 may get earth and sand, a stone, etc. blocked among two or more rods 14 and trouble may not be caused to continuous operation. As shown in drawing 2 and drawing 3 , the soil dropping member 5 is the same spacing as spacing of a rod 14, it is the steel plate which carried out opening of the rod passage hole 11 of a major diameter a little than a rod 14, and a mounting bolt 15 is set up by right and left, and the bracket 16 fixed to the lower part of the frame 12 of a sliding mechanism 8 is equipped with this mounting bolt 15 with the nut 17.

[0016] Between the soil dropping member 5 and the bracket 16, the spring 18 is infixed as shock absorbing material, and with a nut 17, buffer absorptive power can be adjusted and it can be set as the impact reference value of arbitration. In addition, it may replace with a spring 18 and the elastic material of rubber and others may be used for shock absorbing material.

[0017] Earth and sand, a stone, etc. which were got blocked between rods 14 when it intruded in the earth are removed by the soil dropping member 5 when extracting the rod unit 4, and a rod 14 passes the rod passage hole 11. With this mine-disposal equipment 2, since the bracket 16 fixed to the frame 12 of a sliding mechanism 8 is equipped with the soil dropping member 5 through the spring 18, when the mine which penetrating of the rod 14 was made to carry out in the earth, and was laid underground is exploded, even if the soil dropping member 5 is directly hit by the blast, the impact by the blast is eased with a spring 18.

[0018] Therefore, when a mine is exploded, it can also be prevented that the soil dropping member 5 is not destroyed by the direct stroke of a blast, and the effect of destruction of the soil dropping member 5 reaches, and damage arises on a part for the rod unit 14 or the principal part of blow device 3 grade others, a sliding mechanism 8 and a boom 7, and the self-propelled car 6. In addition, although breakage is not escaped, if it attaches in the plate 13 with means, such as immobilization by the snap ring from the upper part, a nut stop, and a bell and spigot, even if it damages, it is quickly [ easily and ] exchangeable [ a rod 14 ] for a new article.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the side elevation of the mine-disposal machine equipped with the mine-disposal equipment in which one gestalt of operation of this invention is shown.

[Drawing 2] It is the explanatory view of the wearing condition of a soil dropping member.

[Drawing 3] It is the bottom view of a soil dropping member.

[Drawing 4] It is the side elevation of the mine-disposal machine equipped with conventional mine-disposal equipment.

[Drawing 5] It is the explanatory view of the wearing condition of the conventional soil dropping member.

[Description of Notations]

- 1 Mine-Disposal Machine
- 2 Mine-Disposal Equipment
- 3 Blow Device
- 4 Rod Unit
- 5 Soil Dropping Member
- 6 Self-propelled Car
- 7 Boom
- 8 Sliding Mechanism
- 11 Rod Passage Hole
- 12 Frame
- 13 Plate
- 14 Rod
- 15 Mounting Bolt
- 16 Bracket
- 17 Nut
- 18 Spring

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[Translation done.]

(51)Int.Cl.<sup>7</sup>  
F 4 1 H 11/16

識別記号

F 1  
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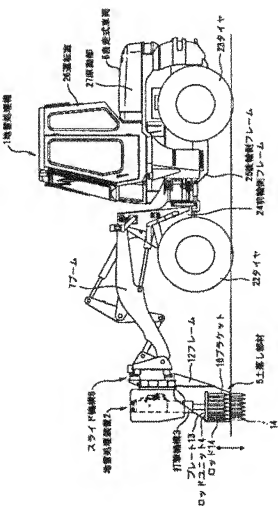
テーマコード\* (参考)

審査請求 未請求 請求項の数1 ○L (全 5 頁)

(21)出願番号	特願2000－112580(P2000－112580)	(71)出願人	000165974 古河機械金属株式会社 東京都千代田区丸の内2丁目6番1号
(22)出願日	平成12年4月13日(2000. 4. 13)	(72)発明者	柴田 寛利 東京都多摩市南野2－2－38
		(74)代理人	100066980 弁理士 森 哲也 (外3名)

(54)【発明の名称】 地雷処理装置

(57)【要約】  
【課題】 地雷を爆破したとき、土落し部材が爆風の直撃によって破壊されず、ロッドユニットや打撃機構等他の主要部分や、スライド機構、ブーム、自走式車両に損傷が生じないようにする。  
【解決手段】 複数本のロッド14がプレート13に並列配設されたロッドユニット4とロッドユニット4に下方への打撃を与える打撃機構3とを備えており、スライド機構8を介して地雷処理機1のブーム7で支持される地雷処理装置2において、ロッド14間に詰まった土砂や石等を除去する土落し部材5を、スライド機構8のフレーム12に緩衝材を介して装着する。



【特許請求の範囲】

【請求項1】 複数本のロッドがプレートに並列配設されたロッドユニットとロッドユニットに下方への打撃を与える打撃機構とを備えており、スライド機構を介して地雷処理機のブームで支持される地雷処理装置であって、

ロッド間に詰まった土砂や石等を除去する土落し部材を、スライド機構のフレームに緩衝材を介して装着したことを特徴とする地雷処理装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、地中に埋設された地雷を処理するための地雷処理装置に関する。

【0002】

【従来の技術】 地中に埋設された地雷を処理するため、自走式車両の前方に地雷処理装置を設けた地雷処理機が提案されている。図4に示すように、この地雷処理機1では、複数本のロッド14がプレート13に並列配設されたロッドユニット4と、ロッドユニット4に下方への打撃を与える打撃機構3とを備えた地雷処理装置2が、自走式車両6に設けたブーム7の前端に、スライド機構8を介して支持されており、地雷処理装置2の位置を検出する位置検出器の検出データに基づいて、制御器がスライド機構8と打撃機構3の作動を制御するようになっている。

【0003】 地雷処理作業を行う場合には、地雷処理機1は、打撃機構3でロッドユニット4に下方への打撃を与え、スライド機構8でロッドユニット4を下方へ移動させてロッド14を地中に貫入させ、地中に埋設されている地雷を破壊あるいは爆破する。作業中は、位置検出器が地雷処理装置2の位置を検出し、制御器が位置検出器の検出データに基づいてスライド機構8と打撃機構3の作動を制御し、自走式車両6の前方で地雷処理装置2を所定の処理幅に互って左右に移動させ、ロッドユニット4の地中への貫入と、抜き出しを行うことにより、車幅以上の領域に埋設されている地雷を処理して自走式車両6の前進を可能にする。よって、地雷処理機1は、地雷の処理と前進とを繰り返すことにより地雷原の全域の地雷を処理することができる。

【0004】 この地雷処理装置2は、複数のロッド14間に土砂や石等が詰まって連続作業に支障をきたすことがないように、ロッド14間に詰まった土砂や石等を除去するための土落し部材9を備えている。図5に示すように、土落し部材9は、ロッド14の間隔と同じ間隔で、ロッド14よりやや大径のロッド通過孔11を開口した鋼板であって、スライド機構8のフレーム12の下端部に固定される。地中に貫入したときロッド14間に詰まった土砂や石等は、ロッドユニット4を抜き出すときに、ロッド14がロッド通過孔11を通過することにより、土落し部材9によって除去される。

【0005】

【発明が解決しようとする課題】 しかしながら、この地雷処理装置2は、土落し部材9がスライド機構8のフレーム12の下端部に直接固定されているので、ロッド14を地中に貫入させて埋設されていた地雷を爆破したとき、土落し部材9が爆風に直撃されて破壊され易く、その影響でロッドユニット4や打撃機構3等他の主要部分や、スライド機構8、ブーム7、自走式車両6まで損傷するおそれがある。

【0006】 本発明は、地雷処理装置における上記問題を解決するものであって、地雷を爆破したとき、土落し部材が爆風の直撃によって破壊されず、ロッドユニットや打撃機構等他の主要部分や、スライド機構、ブーム、自走式車両に損傷が生ずるのを防止することのできる地雷処理装置を提供することを目的とする。

【0007】

【課題を解決するための手段】 本発明では、複数本のロッドがプレートに並列配設されたロッドユニットとロッドユニットに下方への打撃を与える打撃機構とを備えており、スライド機構を介して地雷処理機のブームで支持される地雷処理装置において、ロッド間に詰まった土砂や石等を除去する土落し部材を、スライド機構のフレームに緩衝材を介して装着することにより上記課題を解決している。

【0008】 地雷処理作業を行う場合には、地雷処理機は、打撃機構でロッドユニットに下方への打撃を与え、スライド機構でロッドユニットを下方へ移動させてロッドを地中に貫入させ地雷を破壊あるいは爆破する。地中に貫入した際にロッド間に詰まった石等は、ロッドユニットを抜き出すときに、土落し部材によって除去される。

【0009】 この地雷処理装置では、土落し部材がスライド機構のフレームに緩衝材を介して装着されているので、ロッドを地中に貫入させて埋設されていた地雷を爆破したとき、土落し部材が爆風に直撃されても、爆風による衝撃は緩衝材によって緩和される。従って、地雷を爆破したとき、土落し部材が爆風の直撃によって破壊されず、ロッドユニットや打撃機構等他の主要部分や、スライド機構、ブーム、自走式車両に損傷が生ずるのを防止することができる。

【0010】

【発明の実施の形態】 図1は本発明の実施の一形態を示す地雷処理装置を備えた地雷処理機の側面図、図2は土落し部材の装着状態の説明図、図3は土落し部材の底面図である。ここで、地雷処理機1の本体は、タイヤ22を設けた前輪側フレーム14とタイヤ23を設けた後輪側フレーム25とを中央部で左右に屈曲可能に連結したアーティキュレートタイプの自走式車両6であって、その前輪側フレーム24には起伏可能なブーム7が設けられている。後輪側フレーム25には、運転室26と原動

部27とが設けられている。

【0011】なお、自走式車両には、クローラタイプ等他の形式の車両を用いることもできる。地雷処理装置2は、油圧ブレイカからなる打撃機構3と、複数本のロッド14がプレート13に並列配設されたロッドユニット4とを備えており、スライド機構8を介して左右方向及び上下方向へ移動可能にブーム7の前端に支持されている。

【0012】ロッド14は、処理対象となる地雷の埋設されているところ（通常対人地雷では地下20cm程度）まで十分届く長さに設定される。また、各ロッド14間の距離は、地中に貫入したときロッド14の間に地雷が入り込み破壊や爆破処理ができなくなることがないように、処理対象となる地雷の大きさに見合った距離に設定される。

【0013】この地雷処理機1は、地雷処理装置2の位置を検出する位置検出器の検出データに基づいて、制御器がスライド機構8と打撃機構3の作動を制御するようになっている。地雷処理作業を行う場合には、地雷処理機1は、打撃機構3でロッドユニット4に下方への打撃を与え、スライド機構8でロッドユニット4を下方へ移動させてロッド14を地中に貫入させ、地中に埋設されている地雷を破壊あるいは爆破する。この時、スライド機構8の上下方向用のアクチュエータはフロート位置に切替わっているため、地雷処理装置2は、地雷を爆破したときの爆風による衝撃を上方に受けながすことができる。

【0014】作業中は、位置検出器が地雷処理装置2の位置を検出し、制御器が位置検出器の検出データに基づいてスライド機構8と打撃機構3の作動を制御し、自走式車両6の前方で地雷処理装置2を所定の処理幅に互って左右に移動させて、ロッドユニット4の地中への貫入と、抜き出しを行うことにより、車幅以上の領域に埋設されている地雷を処理して自走式車両6の前進を可能にする。よって、地雷処理機1は、地雷の処理と前進とを繰り返すことにより地雷原の全域の地雷を処理することができる。

【0015】この地雷処理装置2は、複数のロッド14間に土砂や石等が詰まって連続作業に支障をきたすことがないように、ロッド14間に詰まった土砂や石等を除去するための土落し部材5を備えている。図2、図3に示すように、土落し部材5は、ロッド14の間隔と同じ間隔で、ロッド14よりやや大径のロッド通過孔11を開口した銅板であって、左右に取付ボルト15が立設されており、この取付ボルト15が、スライド機構8のフレーム12の下部に固定されたブラケット16にナット17で装着されている。

【0016】土落し部材5とブラケット16との間には、緩衝材としてスプリング18が介装されており、ナット17によって緩衝吸収力を調整し任意の衝撃基準値

に設定することができる。なお、緩衝材には、スプリング18に代えて、ゴムその他の弾性材を用いてもよい。

【0017】地中に貫入したときロッド14間に詰まった土砂や石等は、ロッドユニット4を抜き出すときに、ロッド14がロッド通過孔11を通過することにより、土落し部材5によって除去される。この地雷処理装置2では、土落し部材5がスライド機構8のフレーム12に固定されたブラケット16にスプリング18を介して装着されているので、ロッド14を地中に貫入させて埋設されていた地雷を爆破したとき、土落し部材5が爆風に直撃されても、爆風による衝撃はスプリング18によって緩和される。

【0018】従って、地雷を爆破したとき、土落し部材5が爆風の直撃によって破壊されることはなく、また、土落し部材5の破壊の影響が及んでロッドユニット14や打撃機構3等他の主要部分や、スライド機構8、ブーム7、自走式車両6に損傷が生ずるのを防止することができる。なお、ロッド14は、破損を免れないが、上部からの止め輪による固定、ナット止め、ねじ込み等の手段でプレート13に取付けておけば、破損しても容易かつ迅速に新品と交換することができる。

【0019】

【発明の効果】以上説明したように、本発明の地雷処理装置は、ロッドを地中に貫入させて埋設されていた地雷を爆破したとき、土落し部材が爆風に直撃されても、爆風による衝撃は緩衝材によって緩和される。従って、地雷を爆破したとき、土落し部材が爆風の直撃によって破壊されない。また、土落し部材5の破壊の影響が及んでロッドユニットや打撃機構等他の主要部分や、スライド機構、ブーム、自走式車両に損傷が生ずるのを防止することができる。

【図面の簡単な説明】

【図1】本発明の実施の一形態を示す地雷処理装置を備えた地雷処理機の側面図である。

【図2】土落し部材の装着状態の説明図である。

【図3】土落し部材の底面図である。

【図4】従来の地雷処理装置を備えた地雷処理機の側面図である。

【図5】従来の土落し部材の装着状態の説明図である。

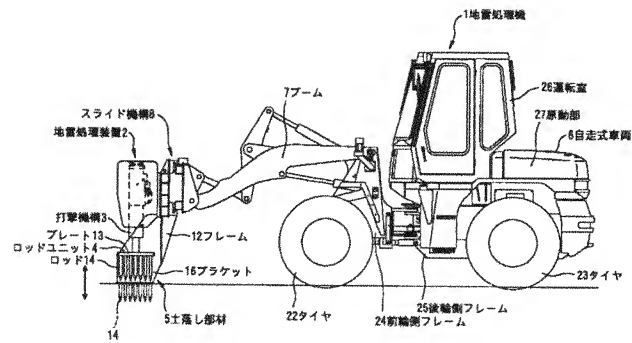
【符号の説明】

- 1 地雷処理機
- 2 地雷処理装置
- 3 打撃機構
- 4 ロッドユニット
- 5 土落し部材
- 6 自走式車両
- 7 ブーム
- 8 スライド機構
- 11 ロッド通過孔
- 12 フレーム

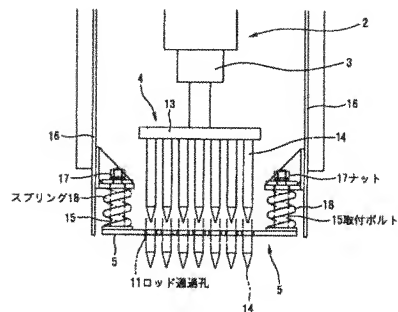
!(4) 001-296100 (P2001-ch) 菩娃

- |          |          |
|----------|----------|
| 13 プレート  | 16 ブラケット |
| 14 ロッド   | 17 ナット   |
| 15 取付ボルト | 18 スプリング |

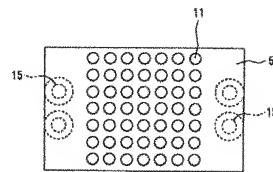
【図1】



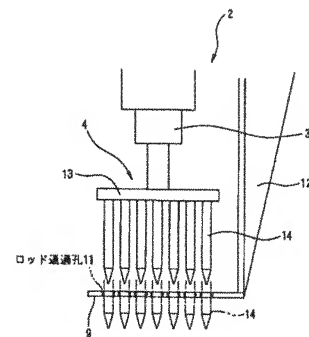
【図2】



【図3】



【図5】





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【図4】

